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therefore necessary. This training should be provided as a part of the general training received in our schools. Provision for affiliation with sanitariums and hospitals caring for tuberculous patients should be made until the time when an educated public will provide this large group of patients with suitable wards or buildings connected with our general hospitals. Then, and only then, shall we be able to handle the tuberculosis problem intelligently.

CARE OF THE PATIENT BEFORE, DURING AND AFTER ANESTHESIA

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Aside from the anesthetist's technique, there are other factors upon which depend the success of the administration of, and a speedy and uneventful recovery from, anesthesia. The preparation is one of the most important factors, and as preparations go to-day, there is not much gain for the patient. The patient's temperament, his general condition, the nature of the operation, the anesthetic used and the amount used, the duration of anesthesia and the patient's state of mind—all play an important part in regard to the recovery, and also in regard to shock.

There ought not to be a routine preparation for anesthesia. Every patient should receive special consideration, aside from the preparation of the surgical field, and the anesthetist should look after it. The nurse anesthetist is handicapped, because she is allowed to do only half of the work she should be doing. The anesthetic and the preparation for it do not get sufficient consideration. No one really thinks very much about it and it is usually entirely forgotten that she has any interest in the preparation. There are opportunities, frequently, when the anesthetist could do something to make a patient more comfortable, but, "it is not routine." The speed with which the patient recovers, depends much upon the anesthetist's technique, but it must be remembered that her technique cannot overcome something that has been overlooked in the preparation.

The attending physician, the surgeon, the operating room nurse, the attending nurses, and the anesthetist, make up the surgical team, each one of whom is interested in his or her own particular part of the procedure. There is one common interest, however,—the welfare of the patient. In order to gain the best possible results, this surgical team should be intact; where one fails, all fail, more or less.

The nurse who prepares the patient for operation can do a great deal toward his comfort and peace of mind, and all these little things count. She should be tactful, she should show an interest, far from alarm, even if there is, apparently, no hope; she should gain his confidence and divert his attention by giving him something else to think about than the impending operation. She should impose calm by being calm, herself, and should keep him at his ease by avoiding rush and hurry and allowing nothing to be said or done which will alarm or frighten him. A hot, cleansing, bed bath, when not contra-indicated, ought to be considered one of the important features of the preparation. Besides making the patient more comfortable, it helps toward recovery by increasing elimination of the skin, and thus tends to improve his general condition.

The preparation ought to include urotropin gr. v, every four hours, with a glass of water, for twenty-four hours before operation. The entire preparation for anesthesia cannot be decided upon before we even know the patient. The preparation, as well as the after care, ought to depend entirely upon the patient and existing conditions.

Waiting until the last minute to decide what anesthetic the patient shall be given, brings with it a lot of unnecessary evils. The anesthetic should be decided upon the day before the operation and the patient prepared accordingly. The specimen of urine should go to the laboratory the morning before, instead of the day of operation, and the report of the urinalysis should be on hand, with the history of the patient and the record of physical examination when the anesthetic is chosen. The anesthetic can be chosen by the resident physician and the anesthetist. The surgeon can change it if he wishes, because a patient prepared for gas is also prepared for ether, but a preparation for ether may not be sufficient for gas.

Preliminary narcotics are advisable for most patients for the following reasons: the patient comes to the operating table without, or with less fear; a more complete anesthesia is obtained with a smaller amount of anesthetic; postoperative pain is diminished during the first few hours, leading to a more quiet recovery and to a reduction of shock and of nausea. Fear should be overcome, if possible. According to statistics, three-fourths of the deaths which have occurred during the time of anesthesia are supposed to have been due to extreme fear. Opinions, of course, differ in regard to the correctness of that statement, but one who gives anesthetics and is familiar with fear and its consequences is inclined to believe that it is possible. I would give an anesthetic to a patient in a critical condition, but unafraid, with no more concern than to one whose general condition is good, but who is "scared to death."

The supposed disadvantages of a narcotic as, for instance, interference with the pupillary reflexes, are not so important. We do not have to depend on these phenomena and can do without them. Morphine is supposed to produce a certain amount of shock by lowering the blood pressure. That may be true sometimes, but it eliminates other factors which produce more shock than itself. Why not choose the lesser evil? It is said to produce nausea. I have often noticed that a small dose, such as one-eighth grain, will do this, while a larger dose will not. Atropine sulphate, 1/150 grain, or 1/200, is given with morphia to counteract its depressing effect; it also dries bronchial secretions and thus renders the respiratory tract a better field for an anesthetic. It is the consensus of opinion that it is better to give these drugs at least twenty minutes before the beginning of the anesthetic, to avoid the simultaneous effect of morphia and nitrous-oxide, which it is said may be fatal. Through my own observations, I have learned that though it may not affect one patient, it may another.

If metabolism is kept as near to normal as possible during the preparation, the patient will be more fit. The walls of the stomach are more or less irritated in the patient who has been without food for longer than twelve hours. Hunger produces gastric juice and gastric juice contains two per cent hydrochloric acid. If the acid is not neutralized, it causes irritation of the walls of the stomach and predisposes to greater irritation from the ether. If there is solid food in the stomach when an anesthetic is administered, it is usually returned before the patient gets through the second stage, and there is the danger of food particles entering the respiratory tract. Therefore, it is advisable that the stomach itself be empty, but that does not mean that it must be empty for twenty-four hours. Another advantage in not withholding food for so many hours, is the fact that the liver is then well stored with glycogen. The amount of glycogen in the liver at the time of anesthesia is supposed to have much to do with postoperative nausea. The claim is, that postoperative nausea and vomiting are due to a disturbance in metabolism rather than to any other cause. Glycogen is said to be in demand constantly during the time of anesthesia, and when exhausted, substitute products are used which, however, do not serve the purpose as glycogen does. A disturbance in metabolism occurs, and nausea and vomiting as a secondary result. This may be another reason why there is less nausea and vomiting in the patient who has had food up to within three or four hours before operation.

It is best for other reasons than the anesthetic, of course, that the stomach be empty and the intestinal tract cleansed, but there is an advantage in giving such foods as will be readily absorbed, such as gruels of barley, rice, oatmeal, etc., up to within three or four hours of operation, unless they are contra-indicated as, for instance, in intestinal obstruction, strangulated hernia, etc. Too much purgation and starvation predispose to shock. One, instead of two, enemas ought to be sufficient after a thorough purgation.

A faulty preparation predisposes to shock. A patient who has been kept awake most of the night before an operation by untimely purgation and enemas, if not by troublesome thoughts of the coming operation, or perhaps by another patient who was operated upon that day and is not sleeping on account of pain in the operative region, is certainly more predisposed to shock and is not well prepared for anesthesia. He is not only troubled with thought as to what may happen during the time of anesthesia, but he is thinking of all the pain that other patient is having and is sure he will fare no better. The preparation should include a sedative the night before, if necessary, to ensure a good night's rest. The purgative could be given at 4 p. m. instead of at 9 or 10 p. m. on the day before, and the enema at 6 a. m. instead of at 2 or 3 a. m. on the day of operation.

Ether produces more shock than does gas oxygen. An operation lasting from one to one and one-half hours produces more shock than does one lasting but one-half hour. The amount of anesthetic given makes some difference. If a larger amount of ether is necessary in some patients to produce anesthesia or to hold the patient in the third stage, it does not seem to cause more shock. If that quantity is that patient's required dose, he usually takes care of it the same as the next patient, who will probably go over a longer period of time with the same amount. When the anesthetic is forced, there is more shock than when it can be administered without force. The nature of the operation is another important factor, any operation that necessitates heavy work is followed by greater shock than is one that can be done with greater gentleness.

When the patient reaches the anesthetizing room, he has, as a rule, made up his mind that the operation is the only thing to be done and that it is best to take the anesthetic without fussing. He would rather not talk, perhaps; if so, let him alone. Or, he may not have made up his mind at all, but is waiting to see just how bad it is. Assure him that it is not exactly pleasant, although some people have thought it so, but that it is not as bad as he might think. Try to keep his thoughts engaged with conversation, but do not let him know that you are trying to make him forget the operation. If he has such an idea, then talk about it in an assuring way, ask something about his previous illness and lead his attention away gradually. If a nurse is with him, make some remark to her which you know will attract his attention. Before beginning the anesthetic, look over the chart and notice the patient's condition,—whether frightened, shocked, nervous, etc. Do not forget false teeth, and see that he is comfortable.

When giving gas, see that the mask fits properly, as the work will not be complete if there is leakage. A moist gauze mask is helpful. If the patient's cheeks are hollow, pad the mask with cotton; if old and without teeth, be sure to place a gauze wedge between the gums to keep the mouth open.

There is a certain amount of pain and discomfort associated with an operation that cannot be helped, but there is also a great deal that may be avoided. A certain amount of muscular pain need not be suffered if the operating table is well padded. This is often entirely overlooked. A blanket is certainly not enough. Every table should have a rubber covered pad. Avoid strain on any part or muscle unless the operation requires such. A certain amount of shock can be avoided by keeping the patient dry and warm.

More ether than is needed to maintain anesthesia may mean acidosis, nephritis, shock, gastric dilation, excessive nausea, or vomiting. Any sudden changes in the patient's condition during the time of anesthesia, whether in pulse, respiration, color, or pupillary reflexes, ought to be looked upon as danger signals. The physiological changes which do occur take place gradually, as for instance, passing from one stage to another. We may see the beginning of the second stage of anesthesia, but that does not mean that the patient is in the second stage; we may have some signs of the third or surgical stage, and that does not mean that the patient is altogether through the second stage. The stages of ether anesthesia can be distinguished best in following the effect of the drug: first, sensory stimulation; second, sensory depression; third, motor stimulation; fourth, motor depression. That reads like clockwork, but it does not happen that way. The stages intermingle, before one ends another begins.

The longer the duration of anesthesia the less anesthetic is necessary to maintain anesthesia. I have read that of each drop of ether inhaled, one-fourth is retained, while three-fourths are eliminated. Therefore, the longer the time, the greater the cumulative effect. If the patient shows symptoms of shock, give less anesthesia. Shock takes the place of anesthesia. The anesthetist aims to keep the patient midway between the shock of the anesthesia and the shock of the operation. This is difficult sometimes, especially when it is important to give the smallest possible amount of ether.

When giving ether, the patient is held in the third stage until the surgeon begins to sew up. Then he is given just enough to keep him from straining until the peritoneum is closed, then it is discontinued. By the time the wound is closed and dressed, he will be fairly well out of ether. Nitrous oxide must be continued until the operation is completed because the patient awakens almost immediately when it is discontinued. During a long administration, oxygen may have to be increased from time to time. When the operation is completed, allow the gases to escape from the breathing bag and give pure oxygen for a few seconds, to hasten recovery.

Before the patient leaves the operating room, be sure that he is well covered, for his vitality is somewhat lowered, and the temperature of the operating room, corridors and elevator shaft is not uniform. The patient's head may be moist with perspiration and if it is not covered, there may be postoperative cold in the head, an open door to pleurisy and pneumonia.

In *Modern Surgery,* DaCosta says, "Do not leave alone until entirely out of ether. Sitting up may cause fatal syncope. Mucus or vomited matter may block air passages and cause suffocation. A change in position may cause cessation of feeble respirations."

The best position is the recumbent. Do not allow the head to drop back; see that it is level with the body and turned to the right, until the patient is entirely out of ether. This prevents a collection of mucus in the throat and the possibility of its entering the air passages.

After a tonsillectomy, put the patient in the prone position to prevent the swallowing of blood. If there is any bleeding, it is more easily discovered. After an abdominal section, place a pillow under the knees; it relaxes the abdominal muscles and relieves strain. Keep the patient warm and dry, but do not roast him; let him have some fresh air, but no drafts. The temperature of the room should be about 75-80°. Keep it quiet and moderately bright. Patients are somewhat sensitive to light after ether. The face and hands may be washed with cold water. A hot water bottle to the kidney region may relieve back ache.

Oxygen speeds the recovery from anesthesia and is supposed to diminish nausea slightly. Some doctors think that vinegar reduces nausea. A piece of gauze is moistened with it and is placed over the patient's nose while coming out of ether. One-half ounce of liquid petrolatum, given one-half hour before the administration of ether, is supposed to protect the gastric and intestinal mucosa from the irritation of ether, thereby allaying some nausea and vomiting. A glass of hot water, one hour before the anesthetic, is also recommended. After the patient is well out of ether and is allowed to have water, if he still complains of distress in his stomach and headache, give four ounces of hot water with five grains of sodium bicarbonate.

It may relieve him by one of two ways, as a gastric lavage or ,if retained, it may neutralize the acid contents of the stomach.

If an anesthetist is not giving anesthetics all day and can follow up her work, she will find that she can often make a patient more comfortable. She is familiar with the surgeon's ideas, as well as his rules in regard to giving water, etc., and with the coöperation of the resident physician, she can often relieve the unpleasant effects of an anesthetic.

There is no place for routine treatment in the after care. The patient is the indicator always. Patients differ, operations differ, and the effects of an anesthetic differ with the patient. The care of the patient is never right unless it is adjusted according to the various differences. Some may have water immediately after an operation, while others are better off without it. Some may have a soft diet or a house tray at the next serving, while others ought not to have solid food for days. Patients are often starved unnecessarily. In spite of all the efforts made, nausea and vomiting occur now and then. A careful preparation will prevent much of it and proper after care may overcome the rest.

HOSPITAL CORPSMEN OF THE NAVY

By I. Grace DeWitt Kline, R.N.

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In these days, when the need for an increased nursing service and a better education of the public to aid in the care and prevention of disease are so keenly felt, it would seem a matter of interest to the nursing world to be reminded of the wide scope of our Navy in its education of its hospital corpsmen. They form the nursing personnel of the naval fleets, they are of great value in the hygiene and sanitation of the medical department of the Navy, and as a social factor in our country, their influence cannot be estimated.

The Navy has been termed the school of the nation, and this is particularly true of the hospital corps schools. The students for these schools are men who are selected, either by their choice, or by the recruiting officer at their enlistment or from other branches of the service, because of superior education, experience, or apparent aptitude. They enlist for periods of two, three, or four years. They are given a course of instruction in one of the three hospital corps schools which are located at Newport, R. I., The Great Lakes, and Goat Island, Calif. The theoretical course consists of the subjects taught in the